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(54) **An assembly for two products to be mixed just prior to use**

(57) The invention concerns an assembly for two products to be mixed just prior to use comprising

- a container (4),
- an aseptic, UHT, sterilised or pasteurised product filled in said container and completely sealed with a first membrane (6) and

- a supplement disposed in a second container (1) completely sealed in an internal space of a cap (9) with a second membrane (7) providing barrier properties, the first membrane of the container facing directly the second membrane of the second container, said cap comprising cutting means (32) for the first and/or the second membrane.

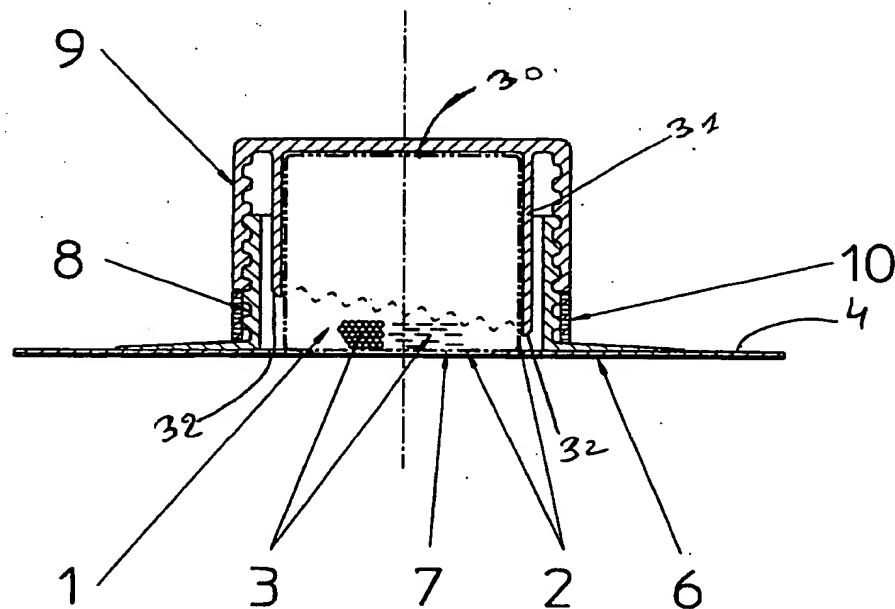


FIG - 1

D description

[0001] The present invention concerns an assembly for two products to be mixed just prior to use.

[0002] The primary object of the invention is to keep separated an additive from the main part of the liquid filled in a container until the drink has to be consumed, at which time the additive is released into the base liquid. Such solutions are already known for example in the EP Patent No. 561'322. This patent concerns a dropping bottle particularly for pharmaceutical products to be activated by mixing prior to use. However, such a dropper bottle is different in use compared with normal rigid or semi-rigid packages, like bottles, jars, cups and pouches. In this patent, the main product and the supplement are separated by only one membrane in-between. For a production of supplement and product at different locations or because of the product filling requirements, that could be sterile or aseptical filling, it is not possible to have the main container and the supplement not completely sealed and closed against outside atmosphere.

[0003] The present invention concerns an assembly for having two products separately stored, wherein every type of main container can be used and wherein it is possible to produce on different sites the main liquid container and the supplement, that means having for both products a safe and reliable envelope. Both parts are then brought together, so that for the consumer, it is very convenient to achieve the piercing and cutting of both containers to have the right mixing of both components.

[0004] The present invention concerns an assembly for two products to be mixed just prior to use comprising :

- a container,
- an aseptic, UHT, sterilised or pasteurised product filled in said container and completely sealed with a first membrane and
- a supplement disposed in a second container completely sealed in an internal space of a cap with a second membrane providing barrier properties,

the first membrane of the container facing directly the second membrane of the second container, said cap comprising cutting means for the first and/or the second membrane.

[0005] One of the great interest to have both products separately sealed is that up to the end of shelf-life both products are good for consumption without any physical or chemical changes, which would not be the case if they had been mixed at time of product filling in the same package and stored over a certain shelf-life.

[0006] Another great interest of the invention is that the two products are each completely sealed and closed and packaged together as one entity but kept totally separate up to time of consumption.

[0007] Finally, it is possible according to the invention

to use every type of packaging for the liquid product.

[0008] According to the invention, it is possible to have several types of embodiments. According to the first embodiment, the assembly has a first and a second container, wherein the second container is attached to the first membrane of the first container and to the cap and the first container comprises a threaded frame on which engages the threaded cap having further tamper evident means, said threaded cap comprising cutting means for the first membrane surrounding the second container. By the use, the consumer takes the tamper evident means away and can then screw on the cap on the threaded frame, wherein the cutting means moves through the frame to cut the first membrane. Under screw on in the present specification, we understand either in the clockwise or in the counter-clockwise direction. The membrane of the second container is torn and opened because of the attachment of said second container to the first membrane and to the cap. The supplement falls then in the liquid and after a shaking, the final product can be consumed.

[0009] As said before, the second membrane could incorporate barrier properties in regard of gas and/or water vapour transmission rates and/or oxygen transmission rates for keeping the mentioned supplement over a certain shelf-life in a sufficient quality. The actual shelf-life depends on the type of product, but normally it varies in a range of 6 to 12 months. It is possible to take any type of material known in the art for the second container and the second membrane, for example Aluminium Laminate, Polyethylene, Polypropylene, Polystyrene, Polyethylene Terephthalate.

[0010] As already said before, every type of packaging can be used, like a container taken from the group consisting of a rigid package, a semi-rigid package and a soft package. As rigid package, it is possible to use cans, bottles and cups. As semi-rigid package, it is possible to use paperboard-based cartons and as soft packages, pouches and stand-up pouches can be used.

[0011] According to a second embodiment of the invention, the assembly of the invention has a first and a second container, wherein the second container is the internal space of the cap and the cutting means are for the first and the second membrane. In this case too, the tamper evident part is taken away and the cap can be screwed on, so that the cutting means cut the first and the second membranes: the second membrane can have weakening lines to facilitate the cutting.

[0012] According to a third embodiment, the assembly according to the invention has a first and a second container, wherein the second container is in a closed first chamber adjacent along a line to a second chamber of same size as the first chamber, wherein the cutting means for the first and the second membranes are pivotally disposed along the said line in the first chamber and are prolonged in the second chamber with a part being the closure for said second chamber, said second chamber comprising the first membrane of the contain-

er. In this embodiment, the closure of the main container and the cutting means for the second container are an unique element. When the consumer wants to open the package, he has to draw up said closure, wherein the cutting means go down, which then cuts the second container and the first membrane.

[0013] According to a fourth embodiment, the assembly according to the invention has a first and a second container, wherein the second container comprises a compressible material, which is sheltered by a safety cover, said second container comprising a seal breaker, which is free to be activated after removing said safety cover. When the consumer wants to use, he has to push downward on the compressible material, wherein the seal breaker cuts the second and the first membrane.

[0014] According to a fifth embodiment, the assembly according to the invention has a first and a second container, wherein the second container is disposed in the top part of a Snap-On cap and the bottom part of said Snap-On cap comprises the cutting means for the first membrane. When the consumer wants to use the liquid, he takes the tamper evident element away and then he can screw on the Snap-On cap: the cutting means cuts the first membrane. The consumer opens then the top part of the Snap-On cap and takes the membrane from the second container away and closes this top part, so that the supplement flows in the liquid. He shakes the container and the liquid is ready to drink.

[0015] According to a sixth embodiment, the assembly according to the invention has a first and a second container, wherein the second container is disposed in the top part of a Snap-On cap, said container being in the form of an inserted and affixed blister and the bottom part of said Snap-On cap comprising the cutting means for the first membrane. When the consumer wants to have his liquid ready, as for the preceding embodiment, he takes the tamper evident system away, screws on the Snap-On cap so that the cutting means cut the first membrane. With one of his fingers, he pushes then the blister, which breaks and the supplement falls in the liquid. The blister could be in aluminium-laminate.

[0016] Concerning the product filled in the main container, it can be any kind of viscous food, pet food, nutritional and medicine products, like products taken from the group consisting of milk-based product, juice, fruit product, mineral water, stilldrinks, enteral feeding, parenteral feeding, petfood, soup, sauce, dressing and mayonnaise.

[0017] Concerning the supplement, it can be every type of supplement, which provides an added value to the basic product. The supplement can be in liquid, pasty, powder or compacted form. It is taken from the group consisting of foodstuff, minerals, vitamins, flavours, prebiotic and probiotic, like natural and functional ingredients, supplement for infant feeding, like Hypoallergenic powder.

[0018] The ready to drink product can be foreseen for babies, for infants, for adults and for old persons.

[0019] The invention is now illustrated, by way of example, in the attached drawings, in which

Fig. 1 is a section through the cap according to the first embodiment,

Fig. 2,3,4 and 5 are schematic views with the different possibilities for the first container,

Fig. 6 is a section through the cap according to the second embodiment,

Fig. 7 and 8 are schematic views through the cap according to the third embodiment,

Fig. 9 is a schematic view of the assembly according to the fourth embodiment,

Fig. 10 is a schematic view of the cap according to the fifth embodiment and

Fig. 11,12 and 13 are schematic views of the cap according to the last embodiment.

[0020] The package (4) contains an aseptic, UHT, sterilised or pasteurised filled liquid, like milk and is provided with a threaded cap (9). This package (4) is a standing pouch like shown on Figure 2. The package (4) comprises internally a sealed first membrane (6) and a threaded frame (8) stuck on the outside of said package (4). A second container (1) is disposed inside the cap (9): this container is an aluminium bag (2) presenting a second membrane (7) and containing a supplement (3). This membrane (2) is stuck to the membrane (6) and the top of bag (2) is also stuck to the top inside (30) of the cap (9). A tamper evident system (10) is provided on the lower part of the cap (9). Finally, the cap (9) comprises on the inside a hollow cylinder (31), which is a housing for the bag (2). This cylinder has cutting means (32).

[0021] When the consumer needs to use the liquid, he proceeds on the following way: He takes away the tamper evident system (10), screws on the cap (9), so that the cutting means (32) cut the first membrane (6). Simultaneously, by rotating the cap (9), the membrane (2) tears and the powder (3) falls in the liquid. The consumer has then to shake the pouch and the liquid is ready to drink.

[0022] Figure 3 shows the cap (9) on a rigid bottle (11), like a milk bottle. Figure 4 shows the same cap (9) on a cup (28), for example a cup containing a soup or a sauce. Figure 5 shows again the same cap (9) on a brick pack containing juice or mineral water.

[0023] Figure 6 shows a second embodiment of the invention. The main container is represented with its first membrane (38). A cap (35) is screwed on said container: it has a tamper evident device (39). The second container (12) is the internal space of the cap (35) formed through the housing of the internal cylinder (36): it is closed through the membrane (27) presenting a weakening line. This cylinder has cutting means (37). The cap (35) is threaded on a frame (40) integral with the container (38).

The operation for the consumer is the same as for the

preceding embodiment: he takes the tamper evident device (39) away and screw on the cap (35), so that the cutting means (37) cut simultaneously the membrane (27) of the second container and the membrane (38) of the first container. The supplement flows in the liquid and the beverage is ready to drink.

[0024] Figures 7 and 8 shows a third embodiment of the invention. It is no more a cap closure, but a system (15) with two chambers. The first container (41) has an internal first membrane (42) and the two chambers system (15) is stuck on the first container. This system comprises a first chamber (18) and a second chamber (16) of the same size and adjacent along a line (43). The second container (19) is disposed in the first chamber (18). The element (20), which rotates along the line (43), has a part in the first chamber as the cutting means for the second container and also for the first membrane (42) and another part in the second chamber operating as the closure for the first container.

[0025] The consumer proceeds on the following way: he draws upward the element (20), so that the cutting means in the first chamber cuts the second container (19) and also the membrane (42). The supplement falls in the liquid. After shaking the whole content, the consumer takes the membrane (17) from the second chamber away and it is then possible to pour the liquid.

[0026] Figure 9 shows a fourth embodiment of the invention. The bottle (45) is closed with a first membrane (46). A safety cover (22) is put on the top of the bottle. Under this cover, a compressible material (21) builds a housing for the second container, which is formed by the top part (24) closed through the membrane (23). Cutting means (47) are inside the second container.

[0027] The consumer proceeds on the following way: he takes the safety cover (22) away, presses down the compressible material (21), so that the cutting means are pushed down and cut the membranes (23) and (46). The supplement falls in the liquid and after shaking the beverage is ready to drink.

[0028] Figure 10 shows a fifth embodiment of the invention. This is a Snap-On solution. The first container is represented with its membrane (48). The frame (49) is stuck on said container. The Snap-On system comprises a top part (52), a bottom part (25) and a hinge (51) connecting both parts. The bottom part comprises further the cutting means (50). The second container (53) is housed in the top part (52) and is closed with a membrane (2).

[0029] The consumer proceeds on the following way: he takes the tamper evident system away (not shown), so that he can screw on the Snap-On cap till the cutting means (50) cut the membrane (48). He then opens the top part (52) of the Snap-On cap and takes away the membrane (2), closes the top part (52) and the supplement falls in the liquid. After a shaking, the beverage is ready to drink.

[0030] Figure 11 shows a sixth embodiment of the invention. It is also as for the preceding figure, a Snap-On

solution. The same parts have been denoted the same references. The difference with the preceding figure is on the top part of the Snap-On cap. A hinge (56) connects the bottom part (25) with the top part (55). The second container (26) is inserted in the top part: this container could be consisting as a blister pack.

[0031] The consumer proceeds as for the other embodiment for the cutting of the membrane (48), but then, he has no more to open the top part (55) of the Snap-On cap. He has only to push with his finger on the second container (26), so that the other face of said container breaks and the supplement falls in the liquid. After the shaking, the beverage is ready to drink.

[0032] Figures 12 and 13 show the same embodiment as figure 11, with a difference also on the top part of the Snap-On cap. The same parts have been denoted the same references. The second container (61) is inside the top part (64) presenting an aperture (63). A hinge (62) connects this top part with the bottom part (25).

[0033] As for the preceding embodiment, after the cutting of the membrane (48), the consumer has no more to open the top part (64). He pushes with his finger through the aperture (63) on the second container (61) till the face (60) of said container breaks. The supplement falls in the liquid and after a shaking, the beverage is ready to drink.

Claims

1. An assembly for two products to be mixed just prior to use comprising

- a container,
- an aseptic, UHT, sterilised or pasteurised product filled in said container and completely sealed with a first membrane and
- a supplement disposed in a second container completely sealed in an internal space of a cap with a second membrane providing barrier properties,

the first membrane of the container facing directly the second membrane of the second container, said cap comprising cutting means for the first and/or the second membrane.

2. An assembly according to claim 1, wherein the second container is attached to the first membrane of the first container and to the cap and the first container comprises a threaded frame on which engages the threaded cap having further tamper evident means, said threaded cap comprising cutting means for the first membrane surrounding the second container.

3. An assembly according to claim 1, wherein the second container is the internal space of the cap and

the cutting means are for the first and the second membrane.

4. An assembly according to claim 1, wherein the second container is in a closed first chamber adjacent along a line to a second chamber of same size as the first chamber, wherein the cutting means for the first and the second membranes are pivotally disposed along the said line in the first chamber and are prolonged in the second chamber with a part being the closure for said second chamber, said second chamber comprising the first membrane of the container. 5 10
5. An assembly according to claim 1, wherein the second container comprises a compressible material, which is sheltered by a safety cover, said second container comprising a seal breaker, which is free to be activated after removing said safety cover. 15 20
6. An assembly according to claim 1, wherein the second container is disposed in the top part of a Snap-On cap and the bottom part of said Snap-On cap comprising the cutting means for the first membrane. 25
7. An assembly according to claim 1, wherein the second container is disposed in the top part of a Snap-On cap, said container being in the form of an inserted and affixed aluminium blister and the bottom part of said Snap-On cap comprising the cutting means for the first membrane. 30
8. An assembly according to any of claims 1 to 7, wherein the container is taken from the group consisting of a rigid package, a semi-rigid package and a soft package. 35
9. An assembly according to any of claims 1 to 8, wherein the product filled in the container is taken from the group consisting of milk-based product, juice, fruit product, mineral water, stilldrinks, enteral feeding, parenteral feeding, petfood, soup, sauce, dressing and mayonnaise. 40 45
10. An assembly according to any of claims 1 to 9, wherein the supplement is taken from the group consisting of foodstuff, minerals, vitamins, flavours, prebiotic and probiotic, natural and functional ingredients, supplement for infant feeding, like Hypoallergenic powder. 50

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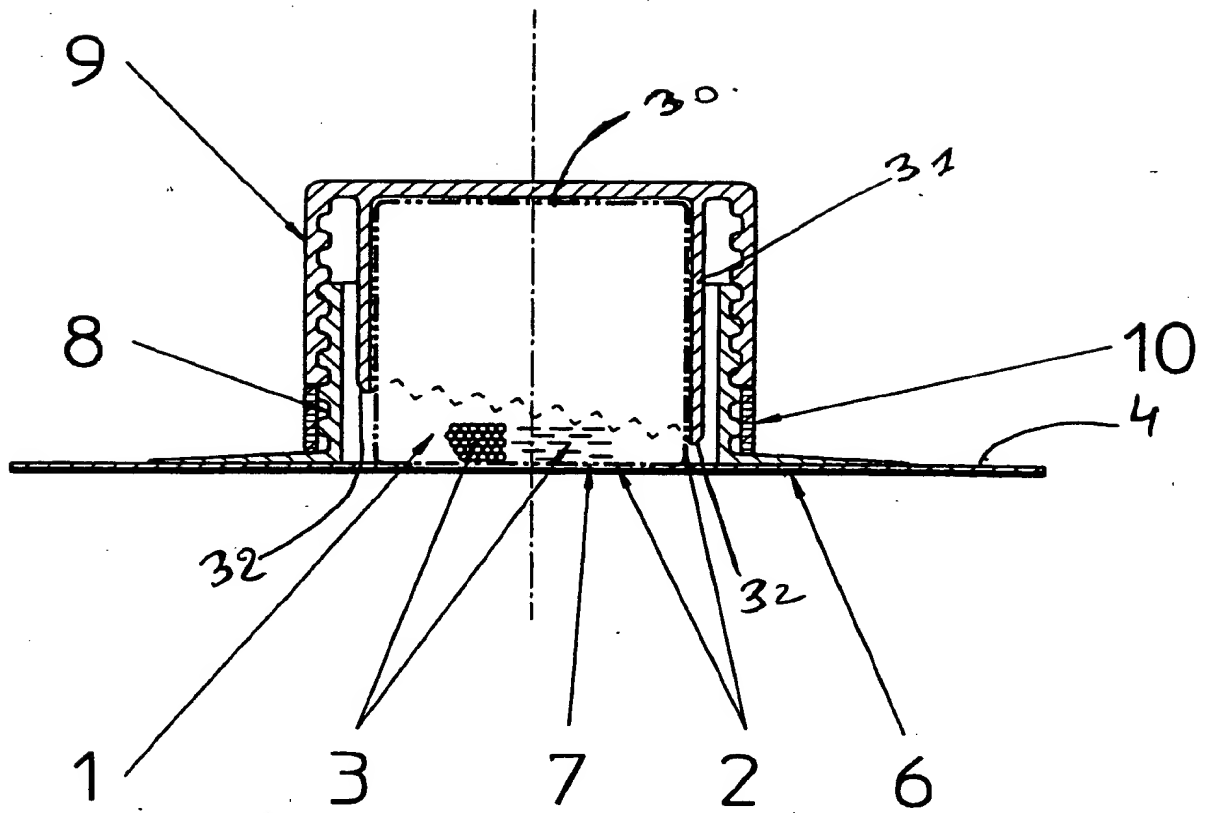


FIG - 1

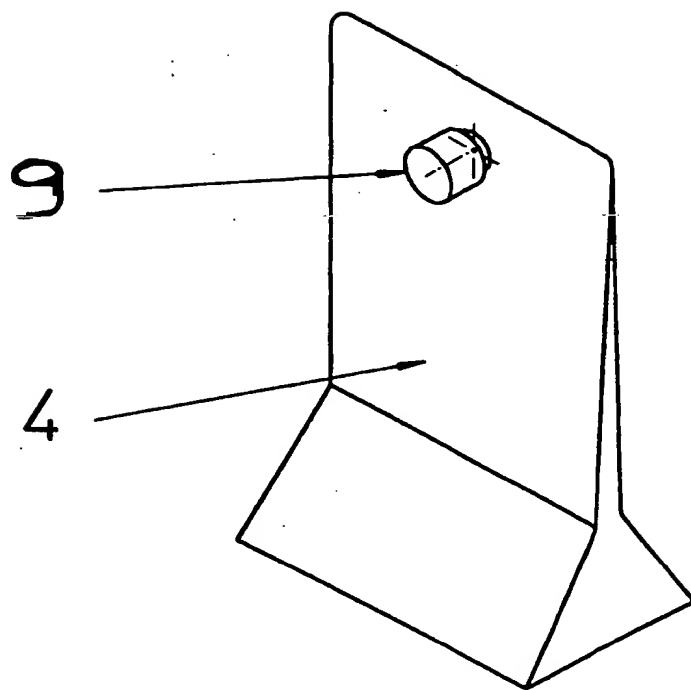


FIG. 2

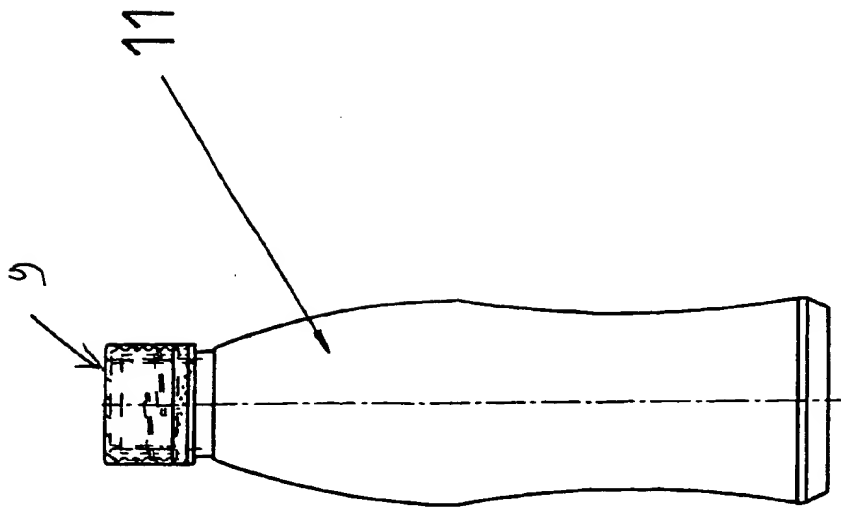


FIG. 3

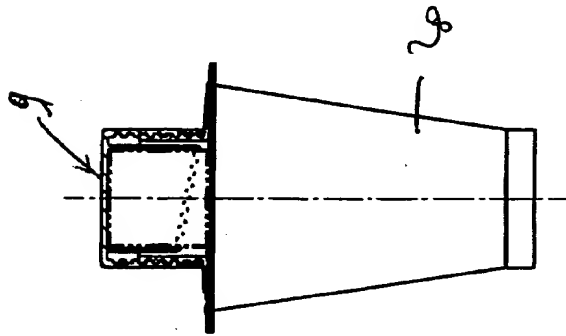


FIG. 4

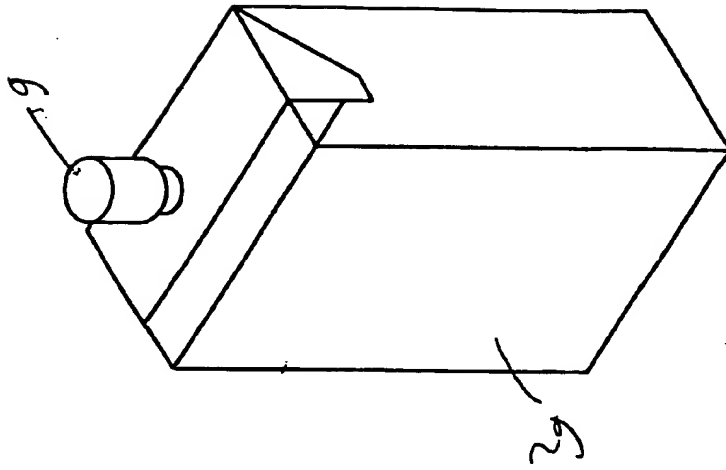


FIG. 5

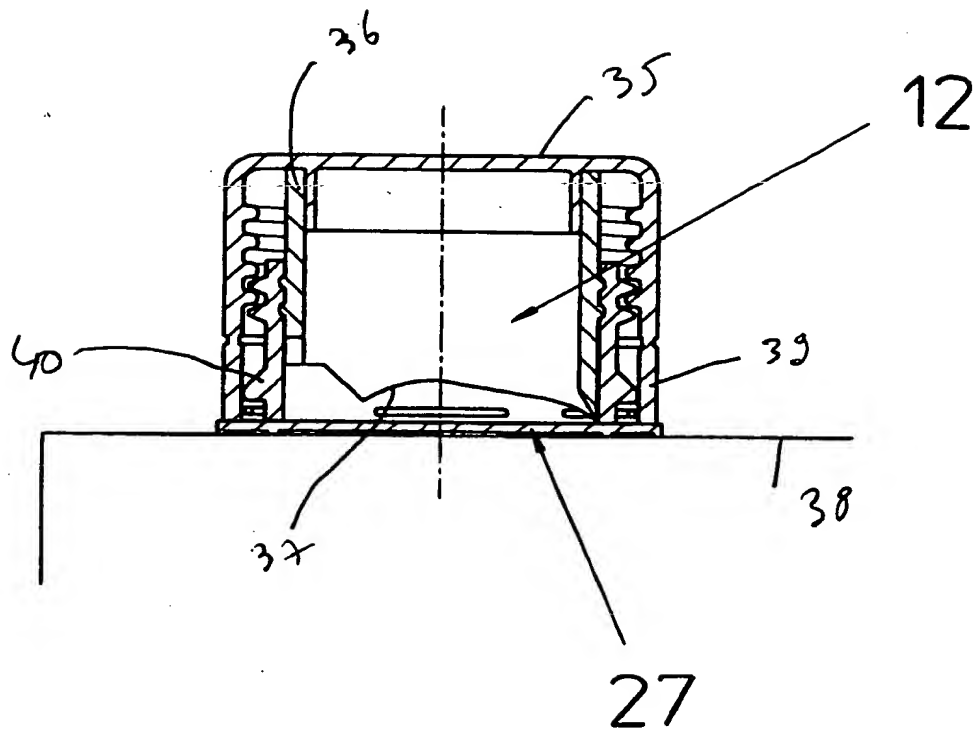
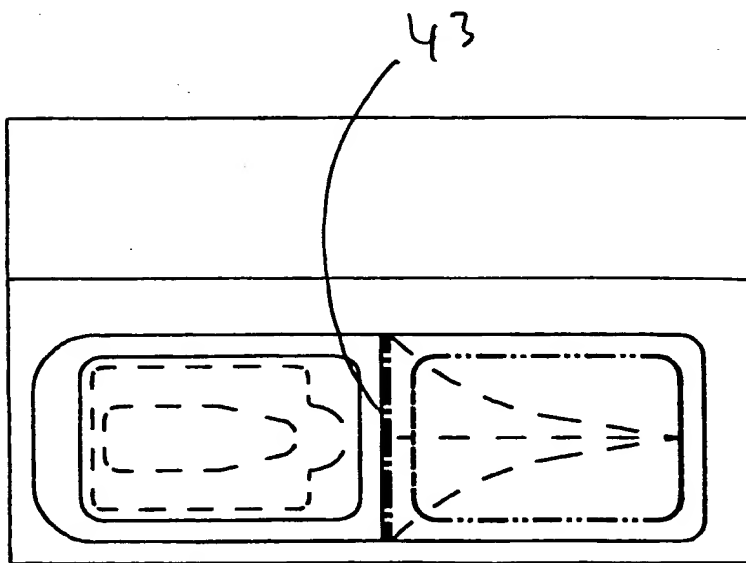
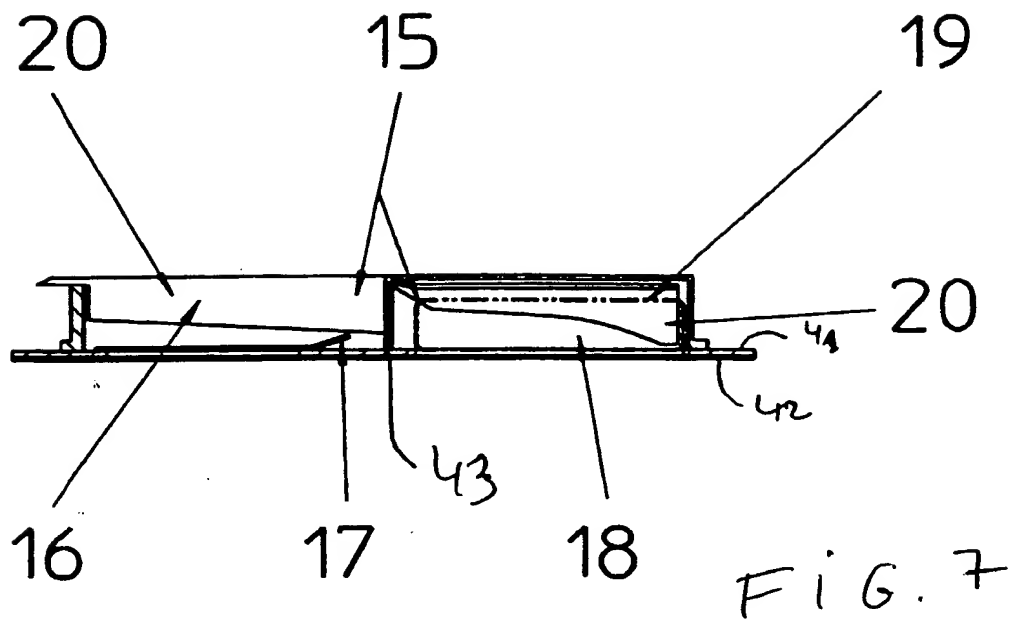


FIG. 6.



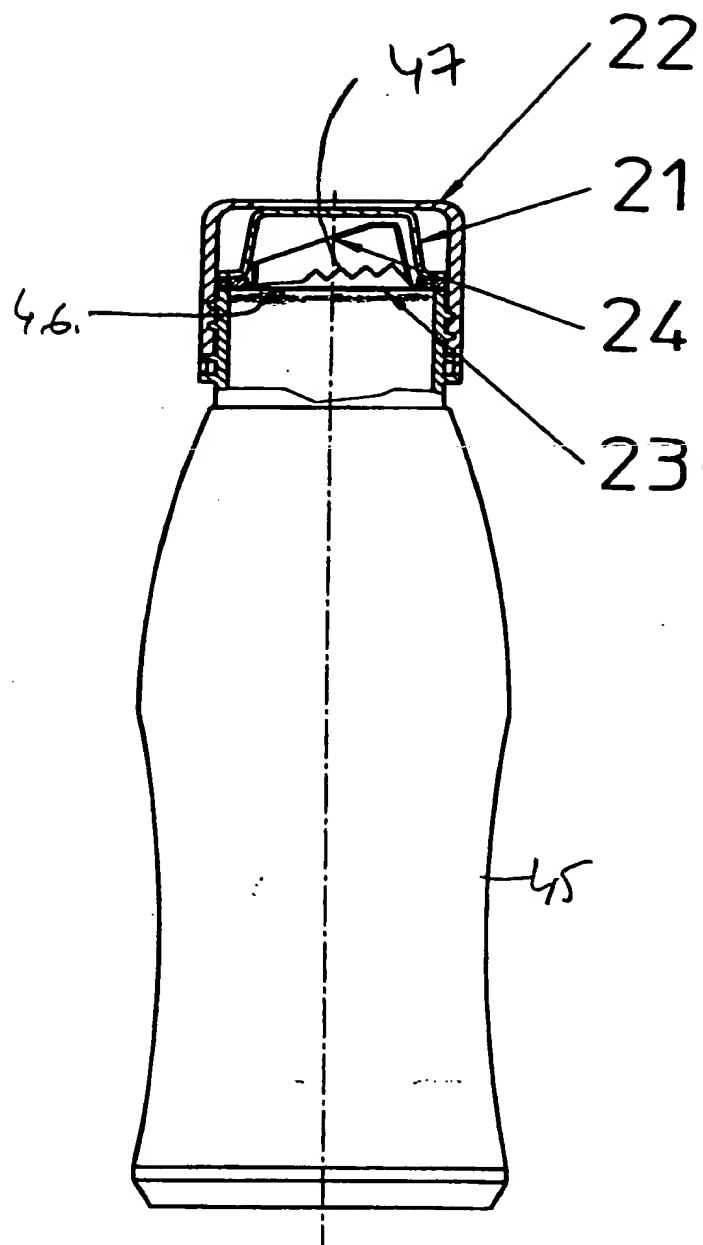


FIG. 9

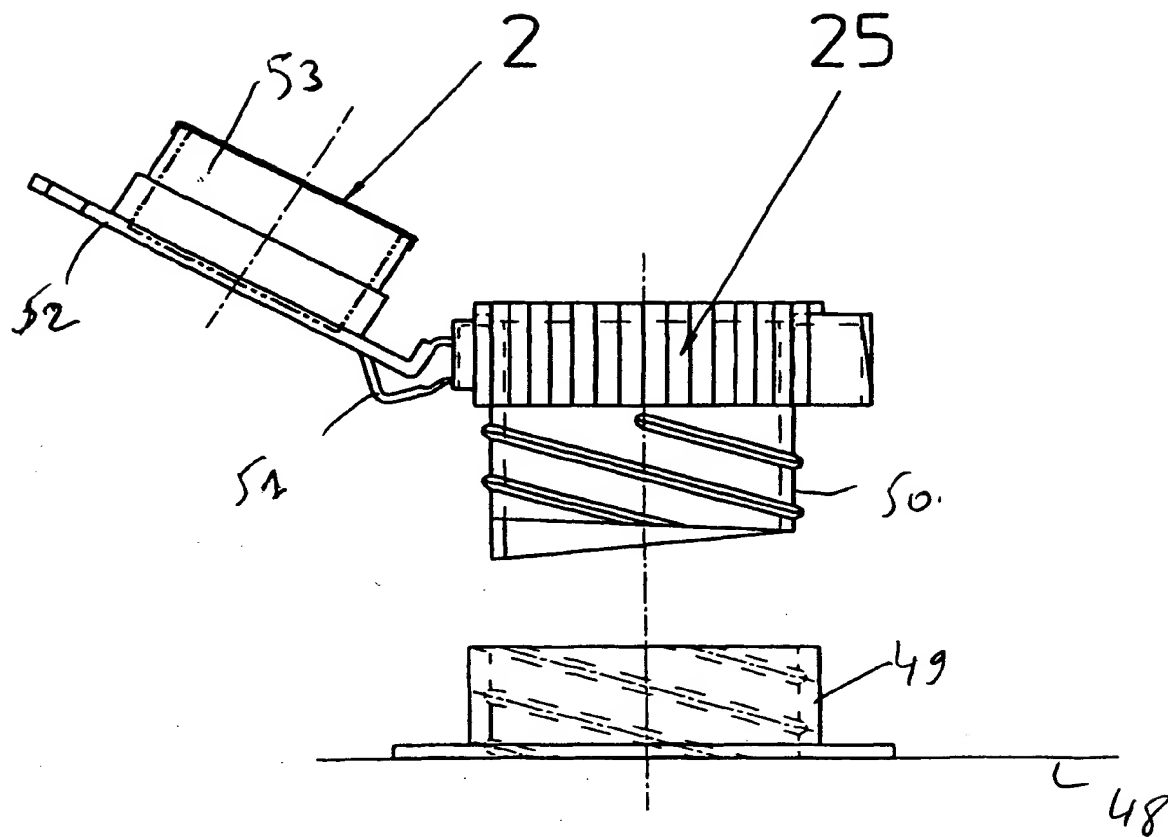
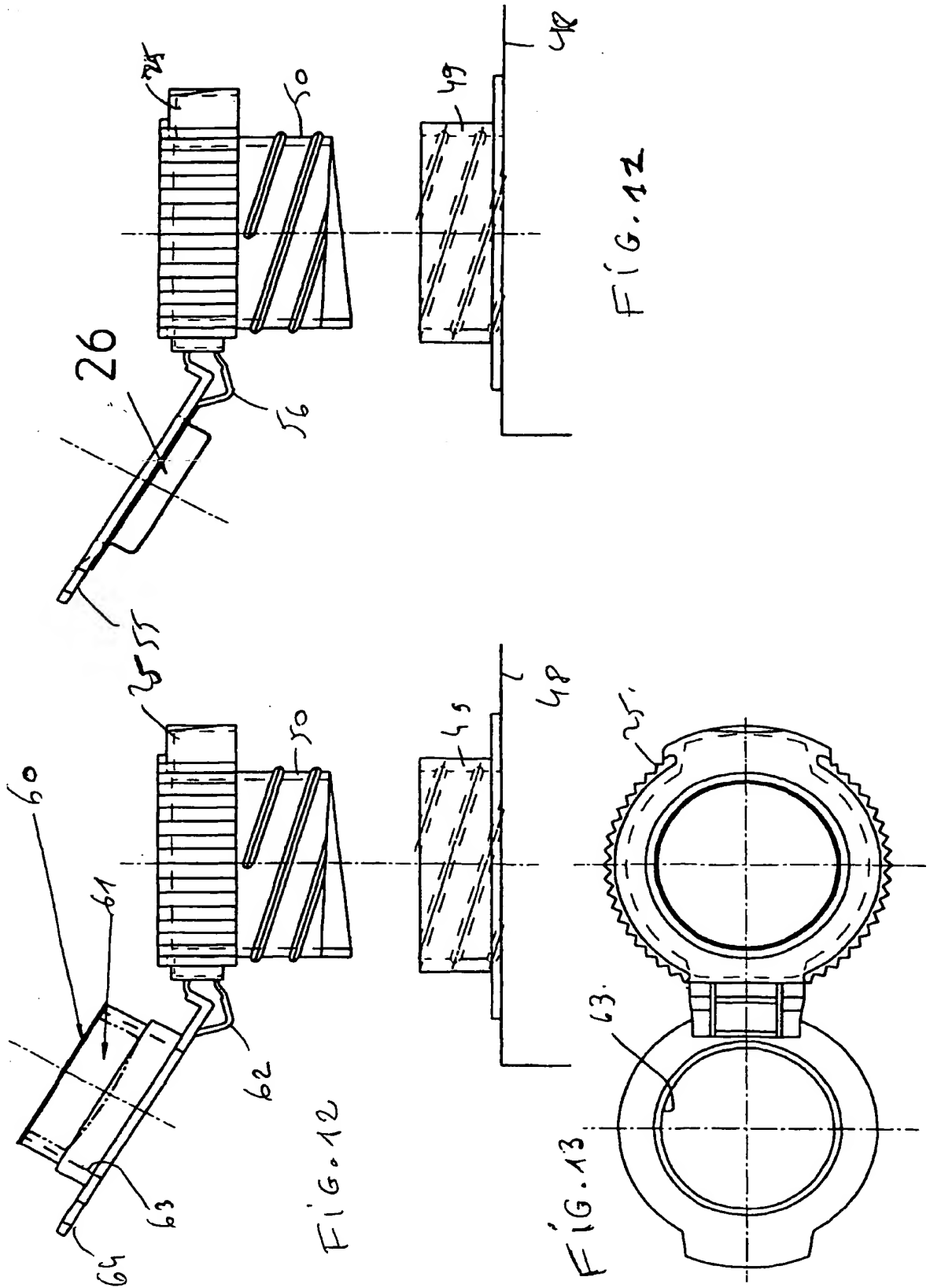


FIG. 10





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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 3993

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Place of search THE HAGUE		Date of completion of the search 29 December 1999	Examiner Bridault, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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